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PD-200265 (BOE 0173 PA)

**In the claims:**

1. (Currently Amended) A method of digitally canceling interference on a received signal within a satellite payload comprising adaptively canceling interference on the received signal using an interference reference feedback signal acquired downstream from a digital processor.

2. (Original) A method as in claim 1 further comprising subtracting an counter-interference signal from the received signal to form a desired signal.

3. (Previously Presented) A method as in claim 2 further comprising digitally processing said desired signal to generate said feedback interference reference signal.

4. (Previously Presented) A method as in claim 3 further comprising correlating said interference reference feedback signal to said desired signal to generate an error signal.

5. (Original) A method as in claim 4 wherein adaptively canceling interference on the received signal further comprising generating said counter-interference signal based on said error signal to cancel said interference.

6. (Original) A method as in claim 5 wherein adaptively canceling interference further comprises iteratively canceling interference on the received signal until said error signal equals zero.

7. (Original) A method as in claim 1 wherein said adaptively canceling interference further comprises digitally and accurately replicating the interference.

8. (Original) A method as in claim 1 further comprising simultaneously digitally canceling interference on a plurality of received signals.

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9. (Original) A method as in claim 1 further comprising sequentially digitally canceling interference on a plurality of received signals.

10. (Previously Presented) A method of digitally canceling interference on a received signal within a satellite payload comprising:

receiving a communication signal having interference;

converting said communication signal into the received signal;

subtracting a counter-interference signal from the received signal to form a desired signal;

digitally processing said desired signal to form an interference reference feedback signal;

correlating said interference reference feedback signal to said desired signal to generate an error signal; and

adaptively canceling interference on the received signal based on said error signal by generating said counter-interference signal to cancel said interference.

11. (Previously Presented) A satellite communication system comprising:

a first antenna for receiving a communication signal;

an analog-to-digital converter (ADC) electrically coupled to said first antenna, said ADC converting said communication signal to a received signal;

a satellite payload circuit comprising a first input, a second input, and an output, said first input is electrically coupled to said ADC;

said satellite payload circuit digitally processing said received signal to form an interference reference feedback signal; and

a feedback signal path electrically coupling said output to said second input, said feedback signal path transferring said interference reference feedback signal from said output to said second input.

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12. (Previously Presented) A system as in claim 11 wherein said satellite payload circuit further comprises:

a subtractor electrically coupled to said ADC, said subtractor subtracting a counter-interference signal from said received signal to form a desired signal;

a digital processor electrically coupled to said subtractor, said digital processor generating said interference reference feedback signal from said desired signal;

a correlator electrically coupled to said subtractor, said correlator comparing said interference reference feedback signal to said desired signal to generate an error signal; and

a controller electrically coupled to said correlator and said subtractor, said controller adaptively canceling interference on said received signal based on said error signal.

13. (Previously Presented) A communication system comprising:

a first antenna for receiving a communication signal;

an analog-to-digital converter (ADC) electrically coupled to said first antenna, said ADC converting said communication signal to a received signal;

a subtractor electrically coupled to said ADC, said subtractor subtracting a counter-interference signal from said received signal to form a desired signal;

a digital processor electrically coupled to said subtractor, said digital processor generating an interference reference feedback signal from said desired signal;

a correlator electrically coupled to said subtractor, said correlator comparing said interference reference feedback signal to said desired signal to generate an error signal; and

a controller electrically coupled to said correlator and said subtractor, said controller adaptively canceling interference on said received signal based on said error signal.

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14. (New) A method of digitally canceling interference on a received signal within a satellite payload comprising adaptively canceling interference on the received signal using an interference reference feedback signal and not using a non-feedback interference signal.